ResearchGate

See discussions, stats, and author profiles for this publication at: https://www.researchgate.net/publication/340900183

Classifying Mermaids: Observations on Local Naming and Classification of Dugongs (Dugong dugon) among the Lio of Flores Island (Eastern Indonesia)

Article *in* Journal of Ethnobiology · April 2020

DOI: 10.2993/0278-0771-40.1.56

CITATIONS
2

READS
170

1 author:

Gregory Forth
University of Alberta
116 PUBLICATIONS **848** CITATIONS

SEE PROFILE

All content following this page was uploaded by Gregory Forth on 15 August 2021.

The user has requested enhancement of the downloaded file.

BioOne COMPLETE

Classifying Mermaids: Observations on Local Naming and Classification of Dugongs (Dugong dugon) among the Lio of Flores Island (Eastern Indonesia)

Author: Forth, Gregory

Source: Journal of Ethnobiology, 40(1) : 56-69

Published By: Society of Ethnobiology

URL: https://doi.org/10.2993/0278-0771-40.1.56

BioOne Complete (complete.BioOne.org) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Complete content is strictly limited to personal, educational, and non - commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

Downloaded From: https://bioone.org/journals/Journal-of-Ethnobiology on 27 Apr 2020
Terms of Use: https://bioone.org/terms-of-use Access provided by University of Alberta

Journal of Ethnobiology

2020 40(1): 56–69

Classifying Mermaids: Observations on Local Naming and Classification of Dugongs (*Dugong dugon*) among the Lio of Flores Island (Eastern Indonesia)

Gregory Forth[1]

Abstract. Folk biological classifications and the taxonomic schemes of scientific biology have often been conceived as two monoliths that sometimes correspond and sometimes do not—as, for example, when folk zoologists classify whales as fish. The Lio people of Flores Island describe dugongs (*Dugong dugon*) as creatures that are half human and half fish, thus, essentially like the European image of mermaids. The characterization relates to a myth, widespread in Southeast Asia, which depicts the animals as deriving from a woman. At the same time, Lio speak of dugongs as, simply, a kind of fish. This apparent inconsistency is reflected in several ways people name dugongs, as well as in sex-differentiable terms and numeral classifiers employed when speaking about the animals. Reviewing different ways Lio describe dugong morphology, this nomenclatural variety is shown to correspond to three complementary models identified as diametric, concentric, and chronological dualism. Finally, I demonstrate how these models are comparable to competing ways of representing relationships among animals in modern biological systematics and discuss the implications of such parallels for ongoing debates about similarity and difference between folk and international biology.

Keywords: dugongs, folk naming and taxonomy, nomenclatural and classificatory variation, biological systematics, Lio (Flores Island, Indonesia)

Introduction

According to a well-known principle of folk taxonomy, "taxa assigned to each rank are mutually exclusive" (Berlin 1992:15). Otherwise expressed, a single taxon, for example, a folk-generic (like English "eel" or "whale") cannot be classified as belonging simultaneously to two or more higher order taxa. For example, "eel," cannot be labeled as both "fish" and "snake"—regardless of physical or behavioral features that might appear to link eels with both snakes and fish. By the same token, where a system of classification incorporates mutually exclusive categories (translatable as "animal, creature" and "human, people"), as in the ethnographic case I consider here, a creature cannot be counted as human and animal at the same time.

The folk zoology of the Lio people of Flores Island, in eastern Indonesia, appears to challenge this principle. Specifically, it seems to do so in regard to Lio representations of dugongs (*Dugong dugon*, also called "sea cows"), large sea mammals of the order Sirenia and creatures that have long been considered the source, or one source, of the image of "mermaids" or "merfolk" in pre-modern Europe and elsewhere (Andaya 2019; Ritvo 1997). Like mermaids, dugongs for Lio appear half human and half fish. This duality finds expression in variable ways Lio describe dugong morphology. But, more strikingly, it is further revealed in the different ways Lio name dugongs. One of these, *ata ruju* or "dugong people," appears to reflect a classification of dugongs as human beings. However, Lio ways of naming dugongs are complex and contextual, and another name specifies the creatures as a kind of fish.

[1]Professor Emeritus, Department of Anthropology, University of Alberta, Edmonton, Alberta, Canada T6G 2H4 (gforth@ualberta.ca)

Downloaded From: https://bioone.org/journals/Journal-of-Ethnobiology on 27 Apr 2020
Terms of Use: https://bioone.org/terms-of-use Access provided by University of Alberta

Especially since Lio ascribe magical or supernatural powers to dugongs, their dual character may suggest an anomaly of the sort Mary Douglas (2002 [1966]) saw as motivating the attribution of such powers to animals that do not fit a society's classifications. As I show, however, Lio thinking about dugongs diverges from Douglas's thesis in several important respects. At the same time, variation in Lio naming and classification of dugongs reveals intriguing parallels with competing ways of representing relationships between species and higher order taxa in modern biological systematics. So, the present case further informs recent debates in the philosophy of science concerning the similarity or degree of fit between animal knowledge in non-Western societies and international biology (e.g., Ludwig 2016).

The dual character of dugongs further informs an origin myth found not just in Lio but in several parts of eastern Indonesia. The myth tells how the first dugong was a human female who, through continuous immersion in the waters of the sea, was transformed into a creature with the lower body of a fish. In most versions of the myth, the woman had already borne children. A version I recorded in the Sikkanese region, to the east of Lio, has the woman giving birth to twins, a human child and an infant dugong. But all variants nevertheless establish the common ancestry of dugongs and humans.

Methods

The present discussion draws on materials the author collected mostly in the eastern part of the Lio region between 2014 and 2018. The study has two sources. After completing an ethnozoological study of the Nage (Forth 2016), an exclusively highland people residing 100 km to the west of Lio, my aim was to extend my knowledge of Flores indigenous zoology in regard to marine fauna. Second, in connection with an ongoing interest in undocumented mystery hominoids reported in several parts of the island, including Lio country (Forth 2008), I wanted to investigate representations of another relatively large and unfamiliar creature considered to combine features of humans and non-human animals. From previous research on the neighboring island of Sumba (Forth 1988), dugongs seemed a worthwhile case. Since the Nage have very little knowledge of dugongs, people residing in coastal settlements in Lio seemed especially promising, as they practice a combination of marine fishing and cultivation and speak a language of the Ngadha-Lio group, of which Nage is also a member.

Practical and conceptual investigations of dugongs and human-dugong relations were mostly conducted in the Lio district of Mego and in a series of Lio villages immediately to the west of Mego. The majority of Mego people speak a dialect labeled "eastern Lio," while people residing to the west speak "central Lio" (Suryati et al. 2013). These dialectal differences, however, do not bear significantly on the several linguistic matters I discuss below. Participants were drawn mainly from the southern part of Lio territory, including the south coastal villages of Wara, Ma'u Lo'o, and Wolo Wiro—all bounded by the Sawu Sea—and in several inland settlements, including Léke Ba'i, which was my home base. For comparative purposes, further enquiries concerning local knowledge of dugongs were conducted in Lio villages on Flores' north coast, bounded by the Flores Sea; outside of Lio territory in the Nage and Keo regions to the west of Lio (including Keo villages on the Flores south central coast); among Sikkanese speakers to the east of Lio; and in coastal settlements of Lamaholot speakers, located even further east, in the far eastern part of Flores Island.

The study primarily employed ethnographic methods of open-ended interviewing, raising the topic of dugongs in a variety of conversational settings. More directive questioning included free-listing of sea creatures with which people were

Downloaded From: https://bioone.org/journals/Journal-of-Ethnobiology on 27 Apr 2020
Terms of Use: https://bioone.org/terms-of-use Access provided by University of Alberta

familiar and asking specific questions about ways male and female marine mammals are distinguished in local languages. I spoke to a variety of people, including men, women, fishermen, and cultivators. However, because some people were questioned only briefly and on one occasion whereas others provided more comprehensive accounts during a series of consultations, it would be misleading to enumerate participants.

Lio Knowledge of Dugongs

Dugongs are rare animals in waters off Lio territory and local statements suggest that they have become even rarer in recent decades—an assessment consistent with a worldwide decline stemming mainly from anthropogenic causes (Marsh 2002; Marsh et al. 2012). As Lio recognize, one cause of dugong death is entanglement in nets and fish-traps, which, since the animals can remain under water for no more than six or seven minutes (Marsh 2002:80), can quickly lead to drowning. Lio do not hunt dugongs and there is no indication that they did in the past. Nevertheless, Lio will eat dugong flesh when it becomes available. Sometimes, dugongs fall prey to fishermen from ethno-linguistic groups operating in Flores waters. On the Flores south coast, men from the port settlement of Ende are reputed to kill dugongs, either deliberately or accidentally, in part by continuing to engage in illegal practice of blast fishing.

Despite their rarity, dugongs are known to Lio living in both northern and southern parts of Flores Island. Naturally, the animals are more familiar to coastal dwellers than to people in the interior. But throughout Lio, dugongs are known for their large size (including an adult length of three meters or more) and distinctive physical features, especially those that resemble a human female. Also securing the dugong's renown are magical powers that confer protection and well-being to humans, attributed to the dugong's bones, other body parts, and tears. These products are further used to ward off crop pests and prevent fire in dwellings, and all benefits dugongs confer on humans Lio generally attribute to the animal's derivation from a human being and, particularly, from a human mother.

Lio descriptions of dugong morphology emphasize the large fish's tail, as well as the curiously incongruous upper body, especially the large forelimbs and the prominent nipples or "breasts" of female specimens. As Lio often note, when the flesh is removed (through decomposition or butchering), limb bones are revealed which bear an uncanny resemblance to human hands. They also note the female external genitalia, described as identical to the genitals of a woman. Occasionally, Lio mention the head and facial hair, on both females and males. But these are often exaggerated in a way that suggests influence from foreign images of "mermaids," including Western representations and the Javanese *puteri duyung* ("dugong princess"), nowadays regularly available through modern media.

As regards dugong behavior, Lio most frequently mention the care dugong mothers provide to their young, including the suckling of infants and the way mothers and young remain close together until the offspring are mature. Dugongs are mostly observed near the shore, where they feed on seagrass. When swimming in deep water, the creatures will assume a more-or-less vertical position with the head held above water, thus, resembling a human swimmer from a distance (Andaya 2019). The same behavior distinguishes dugongs from other sea mammals like whales and dolphins. Yet another feature widely known among Lio is their humanlike ability to "weep," shedding tears that are famous throughout Southeast Asia as a powerful love magic. As most of these features pertain specifically to female specimens, Lio portrayals of dugongs sometimes suggest they are exclusively female, which may also be affected by their mythical origin from a human woman. Nevertheless, Lio clearly recog-

Downloaded From: https://bioone.org/journals/Journal-of-Ethnobiology on 27 Apr 2020
Terms of Use: https://bioone.org/terms-of-use Access provided by University of Alberta

nize that the creatures come in both sexes and that they mate, reproduce, feed, and die like any other natural animal.

Naming Dugongs

Altogether, Lio have four ways of referring to dugongs, all used in single locations.

The simplest term for dugong is *ruju*. Related names occur throughout both Western- and Central-Malayo-Polynesian languages. The first group includes Malay *duyung* and Cebuano (Philippines) *dugong* (Blust 2002), from which the English "dugong" ultimately derives. Names identical to *ruju* occur in Endenese (classified either as a dialect or language closely related to Lio, spoken immediately to the west of the Lio region), in western Lamaholot (spoken in the far eastern part of Flores), and on the neighboring island of Savu (Verheijen 1967). Eastern Lamaholot *juru* (Barnes 1996:291) is evidently related to *ruju* by metathesis. Another cognate of *ruju* is *rujung*, employed both in the Manggarai language of western Flores (Verheijen 1967) and in Sikkanese (Pareira and Lewis 1998), spoken immediately to the east of Lio. *Rujung*, however, is also the word for "dugong" in Buginese (Blust 2002), a Western-Malayo-Polynesian language whose speakers have for centuries been active in Flores waters as fishermen and traders. It would seem likely that the term has been adopted into Florenese languages from Buginese, and that *ruju* in Lio and other Ngadha-Lio languages, all of which lack terminal consonants, has emerged from the loss of the final /ng/. Because Savunese is distantly related to languages of Flores, *ruju* in this language would also appear to have its source in Buginese *rujung*.

Throughout the Malayo-Polynesian languages, words for "dugong" generally comprise a single lexeme. Yet Lio additionally name dugongs *ata ruju*, a term meaning "dugong people." The same usage is found in Endenese, among whom the name has been abbreviated to *ta ruju*, a variant also known to coastal Keo speakers, who most likely have adopted it from Endenese. (By contrast, *duyu*, a name used by inland Keo and Nage, is by all indications a borrowing from Bahasa Indonesia, the Indonesian national language.)

Lio I questioned insisted that, rather than simple *ruju*, either *ata ruju* or the more complete *ika ata ruju*, "dugong people fish," was the proper or most correct form of the name. *Ata*, it should be noted, is the usual term for "people, human being" in Lio as in other Ngadha-Lio languages. As such, speakers otherwise employ the term to denote human groups and categories—as, for example, "Lio people, Lionese" (*Ata Lio*) or indeed, "Canadians" (*Ata Kanada*). Other examples include "female human, woman" (*ata fai*) and "male human, man" (*ata kaki*). But there is a third way which Lio designate dugongs, namely as *ika ruju*, "dugong fish," where *ika* is the general term for "fish." Like simple *ruju*, some people judged *ika ruju* as incomplete, specifically in relation to *ika aja ruju*. Yet observed speech confirms that *ika ruju* too is a regular Lio usage.

The ambiguous status of dugongs in Lio representations is, of course, especially suggested by the name "dugong people fish." Indeed, because Lio classify fish as "animals" (*ule age*), while emphatically excluding humans (*ata*) from their "animal" category, the usage looks like a contradiction. Specifically, it suggests a classification of a subordinate taxon as simultaneously belonging to more than one superordinate taxon. Yet a closer investigation of Lio classificatory discourse reveals that, contrary to what may be anticipated by cultural relativists, Lio do not take the dugong's ambiguity this far. For despite their several anthropomorphous features, in the Lio view, dugongs are not humans or a type of human being. Rather, they are a kind of "fish" (*ika*), a feature of their folk taxonomy of animals reflected in lexicographer Paul Arndt's (1933:151) listing of *ika ruju* (transcribed

Downloaded From: https://bioone.org/journals/Journal-of-Ethnobiology on 27 Apr 2020
Terms of Use: https://bioone.org/terms-of-use Access provided by University of Alberta

as *ika rudzu*) as an entry under *ika* (fish). As Lio commentators explained, although dugongs were originally human, according to the myth of origin, after transforming, their ancestor acquired the limbless lower body and tail flukes of a fish and, therefore, ceased to be human.

This local perspective expresses what can be called a "naturalistic" view of the animals relevant to everyday dealings with dugongs, including eating their flesh. As such, it contrasts with the Lio conception of dugongs as supernatural beings. As described elsewhere (Forth, In press), in this perspective, dugongs are able to temporarily assume (or revert to) human form and, by way of their bones, tears, and other body parts and substances, to provide people with protection and similar benefits. This supernaturalistic (some anthropologists might want to say an "animistic") view of the animals might suggest that simply classifying dugongs as "fish" is not quite consistent with ways in which they evidently remain humanlike, if not quite human. What's more, the classification also seems at variance with the name "dugong people" (*ata ruju*).

However, names cannot always be taken at face value and, regardless of how closely they may be connected, naming and classification are not the same thing, even in folk taxonomy. More specifically, the compound name *ata ruju* can be understood as an unproductive binomial and, by the same token, an instance of metaphorical naming. Comparable usages can be found in many and perhaps all of the world's languages and include such English vernacular names as "water boatman," "painted lady," "silverfish," and "flying fox." The first three names are generally recognized by Anglophones as referring to insects or "bugs," and the last to a kind of bat (at least among Anglophone Australians). This is not to say that *ata ruju* ("dugong people" or "dugong humans") is merely a nomenclatural oddity, a claim more easily made for the modern English examples just cited. As shown, it is significantly connected with the dugong myth of origin and, thus, a well-established "belief" (*sensu* Forth 2019). Whereas the name might be interpreted as a metaphor, Lio ideas about the derivation of the "fish," which the name denotes, cannot. But while the origin myth specifies the ancestor of dugongs as purely human, it also describes how this ancestor was transformed into something very different—a kind of fish.

Also relevant to the status of dugongs in Lio animal classification is Lio practice. Many Lio, and probably the majority, will indeed eat dugong when the meat becomes available. In the same way, most Lio regularly eat monkey flesh, even though some refrain from doing so and for exactly the same reason as some people will not eat dugong, namely, the animal's humanlike appearance. Significantly, monkeys (long tailed macaques, *Macaca fascicularis*) are the only other animals besides dugongs that Lio mythology portrays as deriving from humans. In both instances, then, the bodies of two animals can simply be treated as food regardless of their partly humanlike appearance and a concomitant belief in their human origin, and the reason is that both are now classified not as "humans" but as "animals."

Ambivalence concerning the human status of dugongs finds further expression in words used to distinguish males and females in different sorts of animals and in humans. In response to questioning, some people stated that dugongs should be distinguished as "men" and "women" (thus, with the expressions *ata kaki* and *ata fai*, noted above) and, occasionally, I heard these terms applied to individual dugongs in speech. Use of the human terms, however, tends to be restricted to descriptions of human encounters with dugongs, including accounts of how certain men were reputedly able to obtain tears from living animals. Accordingly, other people

Downloaded From: https://bioone.org/journals/Journal-of-Ethnobiology on 27 Apr 2020
Terms of Use: https://bioone.org/terms-of-use Access provided by University of Alberta

insisted that, because dugongs were, after all, animals, the animal sex terms *metu* for females and *mosa* or, less often, *lalu*, should be employed for males, and observed speech tended to bear this out. As the term for male mammals, the more common use of *mosa* suggests another irregularity, insofar as Lio classify dugongs as fish, the males of which, like other non-mammals, should be called *lalu*. However, apart from the dugong's partly mammalian morphology, it is probably the animal's relatively large size that accounts for *mosa*. Lio use *mosa* for male whales, another marine mammal usually classified as a fish (*ika*). *Metu*, by contrast, denotes the females of all animals, both mammals and non-mammals.

Besides the terms for "man" and "woman," Lio occasionally speak of male and female dugongs using honorifics translating as "old lord" (*mo'a laki*) and "elderly lady" (*fai ngga'e*). But the qualification regarding context applies here as well, and at least one English comparison is found in the Australian use of "old man kangaroo" for adult male members of larger species of the Macropodidae. As I was told, people should use these same honorifics when encountering what were described as other rarely seen animals. As one man put it, if someone should come across a peculiar creature in the forest, such as a snake that might be a manifestation of a forest spirit (*nitu*), then the person should address the creature as "old lord" or "elderly lady" and apologize for trespassing on its territory. The honorifics are especially appropriate when the spot is reputed to be an abode of autochthonous forest spirits or the sort of place that the spirits are typically believed to inhabit. As I explain elsewhere (Forth, In press), when conceived as supernatural beings, dugongs are represented in several ways as comparable to these spirits. Thus, such naming practices once again reveal, if not a complete identification of dugongs with spirits, a partial identification with what may be called fully supernatural beings and their occasional manifestation in animal form, especially snakes and eels. Lio, it should be noted, distinguish fully supernatural beings as completely intangible entities that, unlike humans and animals (including dugongs), lack bodies and consist "only of spirit" (*mae mésa*).

Although symptomatic of the same ambiguity, there is much less disagreement over which numeral classifier (words used when enumerating living things and objects of particular kinds) should be employed for dugongs. When questioned, very few people gave *kolo* or *imu*, classifiers for human beings (e.g., *ata kolo telu*, "three people"; *kolo* literally means "head"). In fact, most were certain that *éko* ("tail"), the classifier for all animals (e.g., *ika éko telu*, "three fish"), was the correct term for dugongs. What's more, some among the latter explained that, despite their mythological derivation from a human, dugongs were now a kind of "fish." Also borne out by observed speech, the use of "tail" (*éko*) when enumerating dugongs obviously agrees with the animal's possession of a fishlike tail. Individual applications of human or animal sex terms and classifiers to dugongs might be expected to accord with one another or with variation in the use of names incorporating "human" (i.e., *ika ata ruju* or *ata ruju*, "dugong people") and those that do not (i.e., *ruju* or *ika ruju*, "dugong fish"). But I found no consistency in this regard.

Local Models of Dugong Morphology

Variation comparable to what is found in naming dugongs and the application of sex-differentiable terms and numeral classifiers is found in different ways Lio describe the animal's morphology. When describing dugongs, it is important to stress that individual informants do not exclusively hold to one view or the other but combine these, either in single accounts or when talking about the animals on different occasions. As noted, people often characterize dugongs as creatures with a top half like a human (more specifically a human

Downloaded From: https://bioone.org/journals/Journal-of-Ethnobiology on 27 Apr 2020
Terms of Use: https://bioone.org/terms-of-use Access provided by University of Alberta

female) and a lower half like a fish, ending in a fish's tail. This view of dugong bodies focuses on purely external features of the animals. Other times, Lio emphasize a contrast of exterior and interior, noting how, on the outside and in regard to the creature's general form, dugongs look much like other "fish" (*ika*), while on the inside, and especially in regard to their limb bones, they resemble human beings. Elaborating this same contrast, there is also the rather more fanciful idea that, in the human ancestor's metamorphosis, the woman's legs became crossed, to form the tail flukes. Similarly emphasizing the fish-like, or at least non-human, appearance of the dugong's outward form is the claim, mentioned in one version of the origin myth, that when completing her transformation into a dugong, the mythical woman pulled her sarong (a long, tubular, skirt-like garment) over her head, thus obscuring her human facial features.

Contrasting the dugong's upper and lower (or front and back) halves and the exterior and interior of the animal's body, the two ways of describing dugong morphology suggest two models distinguishable as "diametric" and "concentric," respectively. For social anthropologists, the models may recall the two identically named ways of representing socio-spatial dualism, identified in a famous essay by Claude Lévi-Strauss (1963a). Emphasizing the humanlike nipples and breasts—and also the external genitalia (although these are located more towards the tail end of the animal)—the diametric view is more closely connected with common portrayals of dugongs as almost exclusively female creatures. By contrast, the concentric model, focusing on the internal bones and pertaining to the dugong's hidden human quality, reflecting the creature's human derivation, is obviously sex neutral. Yet the two models equally depict dugongs as half animal and half fish.

Some resolution of this opposition is achieved by what can be identified as a third model. This is a chronological dualism expressed in the origin myth, where an initially human female acquires morphological and behavioral traits and an exclusively marine habitat, and so becomes an animal, more specifically a fish (see Figure 1). Conceptually locating one half of the animal in the distant past and the other in the present, the model of chronological dualism accommodates the folk taxonomic view that dugongs should be classified as "fish." Yet for Lio, as for other eastern Indonesians, the animal's humanlike physical features remain. Indeed, it is these they cite in characterizing the dugong as a highly distinctive and peculiar animal, an image that informs both the origin myth and a representation of dugongs as partly supernatural beings able temporarily to resume human form and whose body parts—the bones and other normally unseen interior components of the animal—afford people protection and well-being.

Pointing to yet another kind of dualism, the dugong's ambiguous character in relation to the human-animal divide finds further expression in a minority view offered by just three informants, all younger men. According to this perspective, there are actually two creatures: "dugongs" (in one version "true dugongs") and "dugong fish" (or "fish dugongs"). The two names translate to the Indonesian *duyung* and *ikan duyung* (or *duyung ikan*), respectively, and correspond to Lio *ruju* (and, as will become clear, *ata ruju*, "dugong people") and *ika ruju,* "dugong fish." As all three men explained, "dugongs" have the tail of a fish and a top half like a woman, with a human face, long head hair, and breasts. By contrast, "dugong fish" (cf. Lio *ika ruju*) look like other fish, but their bones, observable only when the flesh is removed from a carcass, look like human bones.

This distinction exaggerates the external, humanlike features of the "dugong." It equally exaggerates both the external, fishlike features and the humanlike appearance of the interior bones of the "dugong

Downloaded From: https://bioone.org/journals/Journal-of-Ethnobiology on 27 Apr 2020
Terms of Use: https://bioone.org/terms-of-use Access provided by University of Alberta

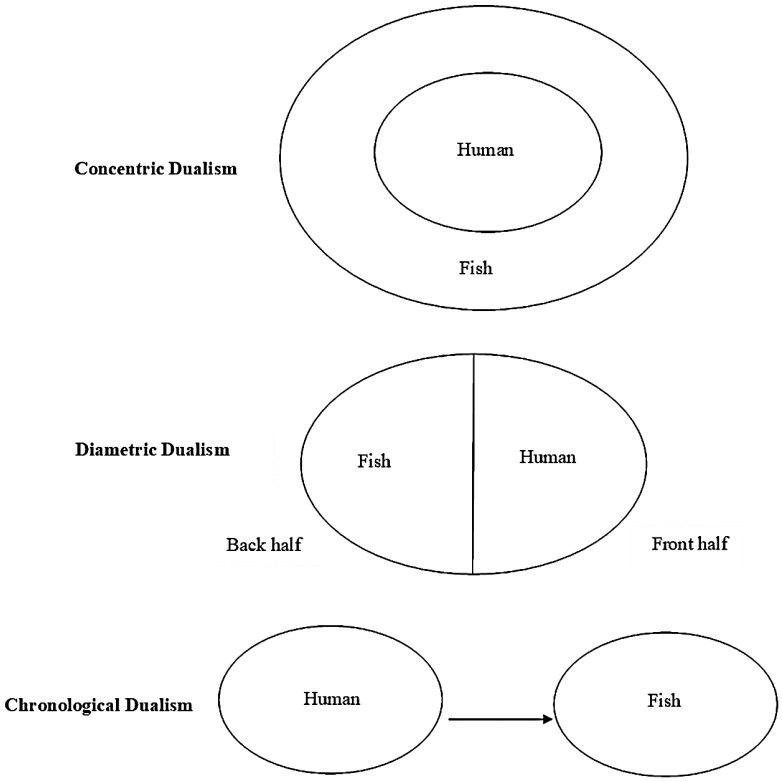

Figure 1. Three models of human-fish dualism in dugong morphology.

fish." Since this minority view emerged from conversations with young men in their twenties and thirties, the image of "dugongs," in contrast to "dugong fish," very probably reflects the influence of modern media's depictions of mermaids. In these, mermaids are portrayed as aquatic creatures whose top half not only resembles a human female but corresponds fully to a woman, and indeed a young and beautiful woman. At the same time, Lio more generally tend to exaggerate the human features of dugongs, mentioning long head hair and humanlike faces, whereas others deny the long hair and describe the face as resembling that of a buffalo, horse, or pig. But whatever the source of the hyperbole, it is nonetheless clear that, rather than expressing a separate model, this fourth representation of dugong morphology combines diametric and concentric dualism. More particularly, it distinguishes the two dualisms as models manifest in two separate creatures, the decidedly mermaid-like "dugong" and the externally fishlike "dugong fish."

Competing Visions of Taxonomic Relations in Lio Folk Zoology and Modern Biology

Despite Lio insistence that dugongs are now sufficiently fishlike to be classified as "fish," a view articulated in the name *ika ruju* ("dugong fish"), the remaining human features, which in different ways find expression in models of both diametric and concentric dualism, might yet appear to pose a challenge for Lio folk taxonomy. If names like *ata ruju* ("dugong people) and even *ika ata ruju* ("dugong people fish") do not suggest an alternative way in which dugongs might be classified in the present day, they nonetheless imply that, in the past,

Downloaded From: https://bioone.org/journals/Journal-of-Ethnobiology on 27 Apr 2020
Terms of Use: https://bioone.org/terms-of-use Access provided by University of Alberta

the dugong ancestor would have had to be classified as a different kind of creature—as the origin myth and the chronological model make clear. Interestingly, the palpable ambiguity of dugongs for Lio—in regard to the animal's physical features, different ways it is named, and different ways in which it might be accommodated to Lio folk taxonomy—find intriguing parallels in modern biological systematics, where professional zoologists hold contrasting views on ways of conceptualizing and representing relations between different animal species (Carr 2012; Stamos 2007).

In modern biology, the main distinction concerns the newer cladistic approach to classification that has come to challenge a more traditional systematics. Bound up with these competing approaches is a further contrast of monophyletic and polyphyletic classification. Focusing exclusively on evolutionary relationships, advocates of cladistic classification treat birds and dinosaurs, for example, as members of a single "clade" labeled Dinosauria, which is to say "monophyletically." Cladists, thus, treat birds, if not simply as dinosaurs, then as sharing essential features with dinosaurs that derive from a common ancestor. Although dinosaurs are now extinct, whereas humans are not, in this relationship, one can immediately discern a parallel with the Lio conception of dugongs as retaining some essential part of their human ancestor, a view that finds partial expression in the name "dugong people." Another example, and another comparison with one Lio perspective on dugongs, is the cladistic grouping together of lungfish and mammals (including human beings), rather than classifying lungfish with "other fish" (such as trout and tuna). In addition, the monophyletic approach to dinosaurs and birds is consonant with "concentric dualism" in Lio descriptions of dugong morphology, in which the most telling indices of the animal's human derivation are the bones, especially the limb bones. In a modern evolutionary view, of course, the dugong' limbs indicate the animal's terrestrial mammalian origin. Thus, if Lio were cladists, they would most likely classify dugongs (*ruju*) as "humans" (*ata*), as they almost seem to do when they call them *ata ruju* ("dugong people").

In contrast, a more traditional approach to biological systematics, sometimes designated evolutionary taxonomy (Yoon 2009), accepts groups, or taxa, that biologists call "paraphyletic" (Stamos 2007:66–67). Paraphyletic classification treats birds and dinosaurs separately, specifically by including only certain descendants of the common ancestor within the Dinosauria (namely, the dinosaurs proper) and excluding all birds (Aves). This approach is comparable to the general Lio view that, while dugongs were once humans, they are now "animals" (a category that for Lio excludes humans) and, more particularly, a kind of "fish." In regard to naming, the position resonates in other ways Lio name dugongs—including "dugong fish" (*ika ruju*) and simply *ruju* (translatable only as "dugong").

As applied to humans and dugongs, a paraphyletic view also corresponds to chronological dualism, insofar as, in the Lio myth of origin, a human ancestor is transformed into a fish and ceases to be human or, at least, fully human. On the other hand, the monophyletic approach of the cladists resonates with a Lio depiction of dugongs as retaining human traits and as being able, situationally and temporarily, to assume or resume human form. Interestingly enough, this ability does not pertain to the local "naturalist" view of dugongs, corresponding, of course, to their designation as "dugong fish," but ironically belongs with representations that would ordinarily be called supernatural, spiritual, or religious. By the same token, the cladistic approach is arguably more consistent with representations of an entity being two different things at the same time.

Focusing on external dugong morphology, the diametric dualism discernible in Lio descriptions of dugongs as possessing

Downloaded From: https://bioone.org/journals/Journal-of-Ethnobiology on 27 Apr 2020
Terms of Use: https://bioone.org/terms-of-use Access provided by University of Alberta

a human upper body and a fishlike lower half is less easily accommodated in these comparisons. Still, as the diametric model concerns more a synchronic depiction of dugongs in relation to both humans and fish, and, moreover, one in which both hominine and piscine traits are purely external, it implies a third way in which organisms have been classified in Western science. This is the "polyphyletic" approach, a form of classification in which a category can include members deriving from any number of unrelated or only distantly related ancestors. In a similar way, the Lio life-form taxon "fish" (*ika*) includes both dugongs, which are believed to descend from humans, and other "fish"—bony fish, sharks, rays, whales, dolphins, and so on—which are not. Conversely, although Lio represent monkeys (long tailed macaques, *Macaca fascicularis*), as well as dugongs, as descending from humans, monkeys (*ro'a*) are certainly not classified as "fish." Nor are monkeys and dugongs included together in any Lio animal category—and neither are classified as humans.

Polyphyletic groups are rejected in modern biology on the grounds that they are not "natural groups" (Stamos 2007:66). By contrast, classifying animals polyphyletically is pervasive in folk taxonomy, including the animal and plant taxonomy of vernacular English. Despite its coexistence with representations of creatures of one kind transforming into another, as in the Lio myth of the dugong, folk taxonomy, or folk zoology, generally, has no basis in any kind of systematic evolutionary theory. Grounded in manifest morphological and behavioral similarities and differences, folk taxonomists the world over typically place whales and other sea mammals in a life-form labeled "fish," and include bats in a life-form of "birds."

But while calling cetaceans "fish" is considered simply wrong by moderns (and not just modern scientists), grouping whales with tuna, barracudas, and other large marine fish nevertheless retains an intuitive appeal (Yoon 2009). It further possesses both conceptual or cognitive and practical advantages, the latter especially for fishermen and mariners. Indeed, opposing strict monophyly (or cladistic classification), an approach that, by contrast, entails a number of conceptual and practical problems (e.g., Richards 2010:117–118; Stamos 2007:74), some biologists and philosophers of science (e.g., Dupré 2002:54–55; Yoon 2009) are now advocating, for some purposes, what are, in effect, polyphyletic classes. After all, the products of evolutionary convergence, whereby descendants of different ancestral animals have over time evolved to resemble one another in form and behavior (for example, swallows and swifts, owls and hawks, or, indeed, fish and whales), suggest unitary groupings of some sort, even though systematists cannot admit them as scientific taxa. What's more, unities resulting from convergence among monophyletically "unrelated" animals are surely useful for studies in comparative anatomy and ethology, where knowledge of the development of physical features or behaviors in one group can facilitate insight into corresponding features or behaviors of others (for example, studies of animal locomotion or feeding habits; see Yoon 2009:290–292).

Discussion

By virtue of their simultaneous possession of features of humans and fish, dugongs challenge the most inclusive contrast in Lio folk taxonomy, that of "animal" and "human." As humanlike creatures that live entirely in saltwater, they further challenge a major ecological and cosmological opposition, that of land and sea. According to the approach to animal symbolism advanced by Mary Douglas (2002 [1966]) in her original theory of pollution and taboo, such anomalies should motivate belief in the dugong's supernatural powers. Yet, as noted, in the Lio view, these powers are a function of the dugong's derivation from a human, rather than of anomaly,

Downloaded From: https://bioone.org/journals/Journal-of-Ethnobiology on 27 Apr 2020
Terms of Use: https://bioone.org/terms-of-use Access provided by University of Alberta

per se. Aside from the power to confer protection and well-being by way of the magical deployment of dugong body parts, the powers include the animal's ability to temporarily assume or revert to human form.

In addition, whereas Douglas (2002 [1966]) considered anomalous animals dangerous and potentially harmful, ways in which dugongs supernaturally affect humans are almost entirely positive. For Douglas, of course, anomalous animals threaten an entire system of classification and, for this reason, are subject to taboos. Yet Lio do not consider dugongs dangerous nor are they in any way taboo. While some people will not eat dugong flesh, attributing their aversion to the animal's human aspect, this is a matter of preference rather than prohibition.

Finally, in Douglas's (2002 [1966]) scheme, the criteria by which a creature should be considered anomalous or ambiguous is not always made clear. For Lio, the dugong's ambiguity lies explicitly in the way the creature combines human and animal features and attributes of creatures of the sea and the dry land. Yet neither these irregular combinations nor derivation from a human may be sufficient to secure the dugong's status as a supernaturally powerful animal. For as I have argued elsewhere (Forth, In press), at least as important, in this respect, may be the animal's rarity—the fact that it is seldom seen and the related idea that dugongs do not reveal themselves visually to just anyone.

As demonstrated, rather than tabooing or in any way avoiding dugongs, Lio deal with their combination of human and animal characteristics by accommodating different perspectives through variable ways of naming and classifying dugongs, facilitated by a myth that has the animals moving between categories over time. The different perspectives further align with different models of dugong morphology, which intriguingly parallel competing approaches to animal classification in modern biology. These parallels raise the more general question of how far Lio folk zoology and modern (or international) science resemble one another.

Philosophers of science (e.g., Ludwig 2016) have described knowledge systems as potentially differing in their "ontology" (concerning assumptions about what animals, for example, exist as discrete kinds) and in their "goals." As regards ontology, when Lio speak of "dugongs" (or "dugong people" or "dugong fish"), and when international zoologists speak of *Dugong dugon*, they are, by all indications, speaking of the same animal. International zoologists obviously possess more knowledge of this animal than do Lio. Yet, on the whole, Lio descriptions of dugong morphology and behavior are consistent with this knowledge.

To a degree, the two forms of knowledge are also comparable in their goals. Both international zoologists and Lio regard dugongs as marine animals that have developed from terrestrial creatures. In addition, both have an interest in explaining how this change has occurred. Yet the scientific theory and the folk theory differ in two important respects. One concerns the original creature from which dugongs derive, a terrestrial animal in one case and a human being in the other. The other relates to the processes by which the change came about. Modern science explains dugong evolution with reference to the typically slow processes of adaptation, natural selection, and so on affecting an entire species of animals. For Lio, by contrast, a quasi-evolutionary myth posits a rapid metamorphosis occurring within the lifetime of a single human ancestor. This focus on a single ancestor, moreover, leaves major questions unanswered. Rather like the problem of Cain's wife, it does not explain how the transformed ancestor, who remains female, was able to propagate all succeeding generations of dugongs. In this respect, the Lio myth exhibits a property claimed for myth in general. Interpreting myth as a narrative attempt to resolve

Downloaded From: https://bioone.org/journals/Journal-of-Ethnobiology on 27 Apr 2020
Terms of Use: https://bioone.org/terms-of-use Access provided by University of Alberta

contradictions, Lévi-Strauss (1963b:229) notes that, if the contradictions are real, myth must ultimately fail and, at best, solves one puzzle only by creating others. Accordingly, the origin myth of the dugong appears to resolve the dugong's dual character by way of a quasi-evolutionary development, whereby an ancestral woman is turned into a fish. But in so doing, it only raises the problem of who or what fathered her fish offspring.

The Lio view of dugongs as deriving from a human being rather than a terrestrial animal may appear to follow from such features as the dugong's humanlike limb bones, the "breasts" or nipples of females, and the care mother animals expend on their young. As detailed elsewhere (Forth, In press), the myth of origin accordingly focuses on conflict within a human family that results in the separation of a mother from her husband and children and her eventual transformation into a quite different creature, though one that, for Lio, retains significant human qualities. Yet the shape of the limb bones, the nipples, and dugong maternal care are not sufficient to explain why Lio conceive of dugongs as having a specifically human origin. After all, monkeys are basically similar to humans in all these respects, and maternal care is evident in other large mammals with which Lio are familiar.

Arguably, then, the crucial factor in the specification of a human as the dugong ancestor is the strong contrast all Flores Islanders draw between humans and non-human animals. As a function of this contrast, Lio, and other eastern Indonesians may be assumed to be particularly attentive to animals that challenge the human-animal opposition and, in the dugong, they have found a prime example. Rejecting the modern taxonomic inclusion of "human" within a larger "animal" taxon, Lio zoology thus differs from modern evolutionary biology in a way that presumably can be called "ontological," even though English vernacular usages of "animal" and "human" accord with the Lio opposition. In any case, the difference between Lio and modern scientific understandings of dugong origins more certainly reveals how a difference in classification ("human" as opposed to "animal" versus "human" included in "animal") is bound up with an epistemological difference between the two systems.

Concerned with the way evolutionary theory has affected Western vernacular classification of animals, philosopher John Dupré (2002), in an essay aptly titled, "Are Whales Fish?", addresses a question fully comparable to one Lio implicitly pose in regard to dugongs. Denying there is any single correct way of classifying biological organisms, even within modern science, Dupré (2002:54–55), somewhat like Ludwig (2016), recognizes that different classificatory schemes accommodate "different theoretical and practical scientific goals." Similar to other more recent writers (e.g., Harding 2015), he then argues that there is no good reason why "various schemes of biological classification in ordinary language or in technical but non-scientific domains should not be accorded equal objective legitimacy" (Dupré 2002:54–55) to those employed by modern scientists.

More specifically, Dupré (2002:55), rather than following the monolithic, asserts that whales are mammals and nothing more; it would be philosophically preferable and generally "more perspicacious" to claim that "whales (and dolphins and porpoises) were mammalian fish." The designation "mammalian fish" is facilitated by the author's argument that "mammal" is a scientific term, whereas "fish" is not. Hence, the two categories are not mutually exclusive and, in this phrase, not contradictory. Although he mentions only cetaceans, Dupré's argument applies equally to other marine mammals, including dugongs. In the end, however, Dupré (2002:55, emphasis added) says that he has "had to admit that whales are not fish" because "almost everyone in *our culture*…agrees not to *call* them so." Interestingly, in this statement, the

Downloaded From: https://bioone.org/journals/Journal-of-Ethnobiology on 27 Apr 2020
Terms of Use: https://bioone.org/terms-of-use Access provided by University of Alberta

author appears to reduce classification to naming. But, as shown, not only do names and classification not always converge, even among folk zoologists like Lio, but in coming to know a particular animal, the dugong, Lio have evidently encountered the same challenges as have confronted scientific taxonomists.

Of course, Lio have arrived at a different solution from the modern systematists, by classifying dugongs, whales, and dolphins not as mammals (or specifically, humans) but as "fish." Yet, not least because biological knowledge is not institutionalized in this society, Lio appear to have maintained a more eclectic view of dugongs, especially in comparison to the modern consensus that whales are mammals and definitely not fish. They have done so not only by recognizing their origin in a creature of a very different kind, but also by accepting various ways of naming dugongs and even subscribing to a belief that the animals can occasionally assume (or reassume) human form. At the same time, their commitment to a radical distinction between "humans" and "animals" (noted above) as crucial to their mythical account of the dugong's origin ultimately obliges them to reject any straightforward classification of the creatures as a type of human being, even while they retain "human" (*ata*) in two forms of the dugong's name.

In several places, Dupré (2002) speaks of identifying whales as fish as an article of "folk classification." By this, however, he specifically refers to vernacular classification among Anglophones or Westerners—especially as unaffected by modern education—and he does not discuss the classificatory thought or discourse of non-Western societies. He also treats (Western) folk classification as fundamentally utilitarian and, more importantly for the present discussion, as quite unequivocal. In effect, then, his question (whether whales are fish or mammals) becomes relevant only at a particular historical juncture, when modern scientific knowledge of animals came to challenge Western "folk classification." Yet Lio perspectives on dugongs, as expressed in naming, classification, and a more general folk knowledge of the animals, reveal a diversity of ways the creatures, and their relationship with the folk categories "fish" and "human," can be conceptualized. In other words, contrary to Dupré (2002), folk views of animals need not constitute a single monolithic view, contrasting to, and radically challenged by, a "scientific" view. Indeed, as Dupré (2002) himself suggests, it is not clear that there can be a single scientific view. Thus, folk and scientific classification are not so dissimilar as Dupré's treatment might suggest. The way folk biologists, like the Lio, are able to accommodate different perspectives in their understanding of ambiguous animals could provide support and even a model for the sort of more catholic approach that Dupré and others (cf. Harding 2015:103) advocate for international science.

It is useful to conclude by returning to mermaids and asking the patently nonsensical question of how international scientists might classify mermaids. The question is, of course, nonsensical because, influenced by modern biology, Westerners in general now regard mermaids as non-existent "mythical" creatures, whereas, at least since the documentation of *Dugong dugon* in 1799, dugongs have been considered real animals. By contrast, and notwithstanding the few young men who distinguished "dugongs" from "dugong fish," Lio make no comparable distinction. That is, for Lio, dugongs are simultaneously natural animals and, by virtue of their human characteristics, supernaturally powerful spirit-like beings, much like mermaids. Expressed another way, Lio representations of dugongs accommodate two cognitively distinct treatments. Accommodating the supernatural, one of these has no place in international science. Among Lio, by contrast, both are advertised and facilitated by the acceptably variable naming of dugongs as both a kind of fish and, again like mermaids, a variety of humans.

Downloaded From: https://bioone.org/journals/Journal-of-Ethnobiology on 27 Apr 2020
Terms of Use: https://bioone.org/terms-of-use Access provided by University of Alberta

References Cited

Andaya, B. W. 2019. *The Mysterious Ocean: Underwater Kingdoms, Sea Creatures, and Saintly Miracles in Southeast Asia and Europe*. NSC Working Paper 31. ISEAS-Yusof Ishak Institute, Singapore.

Arndt, P. 1933. *Li'onesisch-Deutsches Wörterbuch*. Arnoldus-Druckerei, Ende-Flores.

Barnes, R. H. 1996. *Sea Hunters of Indonesia: Fishers and Weavers of Lamalera*. Clarendon Press, Oxford.

Berlin, B. 1992. *Ethnobiological Classification: Principles of Categorization of Plants and Animals in Traditional Societies*. Princeton University Press, Princeton, N.J.

Blust, R. 2002. The History of Faunal Terms in Austronesian Languages. *Oceanic Linguistics* 41:89–139.

Carr, S. M. 2012. Concepts of Monopoly, Polyphyly, & Paraphyly. Memorial University Biology Department [web page]. URL: https://www.mun.ca/biology/scarr/Taxon_types.htm. Accessed on July 1, 2019.

Douglas, M. 2002 [1966]. *Purity and Danger: An Analysis of Concepts of Pollution and Taboo*. Routledge, London.

Dupré, J. 2002. *Humans and Other Animals*. Oxford University Press, Oxford.

Forth, G. 1988. Apes and Dugongs: Common Mythological Themes in Diverse Southeast Asian Communities. *Contributions to Southeast Asian Ethnography* 7:189–229.

Forth, G. 2008. *Images of the Wildman in Southeast Asia: An Anthropological Perspective*. Routledge, London and New York.

Forth, G. 2016. *Why the Porcupine is not a Bird: Explorations in the Folk Zoology of an Eastern Indonesian People*. University of Toronto Press, Toronto.

Forth, G. 2019. *A Dog Pissing at the Edge of a Path: Animal Metaphors in an Eastern Indonesian Society*. McGill-Queens University Press, Montreal and Kingston.

Forth, G. In press. Rare Animals as Cryptids and Supernaturals: The Case of the Dugong on Flores Island. *Anthrozoös*. Manuscript available from gforth@ualberta.ca.

Harding, S. 2015. *Objectivity and Diversity: Another Logic of Scientific Research*. University of Chicago Press, Chicago.

Lévi-Strauss, C. 1963a. Do Dual Organizations Exist? In *Structural Anthropology*, pp. 132–163. Basic Books, New York and London.

Lévi-Strauss, C. 1963b. The Structural Study of Myth. In *Structural Anthropology*, pp. 216–231. Basic Books, New York and London.

Ludwig, D. 2016. Overlapping Ontologies and Indigenous Knowledge: From Interpretation to Ontological Self-Determination. *Studies in the History and Philosophy of Science* 59:36–45.

Marsh, H. 2002. *Dugong: Status Reports and Action Plans for Countries and Territories*. United Nations Environment Programme, Nairobi.

Marsh, H., T. J. O'Shea, and J. E. Reynolds, III. 2012. *Ecology and Conservation of the Sirenia: Dugongs and Manatees*. Cambridge University Press, Cambridge.

Pareira, M. M., and E. D. Lewis. 1998. *Kamus Sara Sikka Bahasa Indonesia*. Penerbit Nusa Indah, Ende, Flores.

Richards, R. A. 2010. *The Species Problem: A Philosophical Analysis*. Cambridge University Press, Cambridge.

Ritvo, H. 1997. *The Platypus and the Mermaid and Other Figments of the Classifying Imagination*. Harvard University Press, Cambridge, MA.

Stamos, D. N. 2007. *Darwin and the Nature of Species*. State University of New York Press, Albany, NY.

Suryati, M., A. M. Mbete, M. Lauder, and M. Dhanawaty. 2013. Phonological and Lexical Varieties of Lio Language in Flores, East Nusa Tenggara: A Study of Geographical Dialect. *E Journal of Linguistics* 6:1–27.

Verheijen, J. A. J. 1967. *Kamus Manggarai I: Manggarai-Indonesia*. Martinus Nijhoff, 's-Gravenhage.

Yoon, C. K. 2009. *Naming Nature: The Clash between Instinct and Science*. W.W. Norton & Company, New York and London.

Downloaded From: https://bioone.org/journals/Journal-of-Ethnobiology on 27 Apr 2020
Terms of Use: https://bioone.org/terms-of-use Access provided by University of Alberta